

WHAT IS CLAIMED IS:

1. A scene classification apparatus of video for segmenting video into shot and classifying each scene composed of one or more continuous shots based on a content of the scene, comprising:

5 a detector for detecting shot density DS of the video;
a detector for detecting motion intensity of the respective shots; and

a dynamic/static scene detector for classifying the respective shots into a dynamic scene with much motions or a static scene with little motions based on the shot density and
10 the motion intensity.

2. The scene classification apparatus of video according to
15 claim 1, wherein the dynamic/static scene detector classifies a shot whose shot density is larger than first reference density and whose motion intensity is stronger than first reference intensity into the dynamic scene.

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3. The scene classification apparatus of video according to claim 1, wherein the dynamic/static scene detector classifies a shot whose shot density is smaller than second reference density and whose motion intensity is weaker than second reference
25 intensity into the dynamic scene.

4. A scene classification apparatus of video for segmenting video into shots and classifying each scene composed of at least one continued shot based on a content of the scene, comprising:

an extractor for extracting shots similar to a current
5 target shot from shots after a shot before the target shot only by a predetermined interval; and

a slow scene detector for classifying the target shot into a slow scene of the similar shot based on motion intensity of the target shot and the similar shot.

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5. The scene classification apparatus of video according to claim 4, wherein the slow scene detector classifies the target shot into the slow scene of the similar shot when the motion
15 intensity of the similar shot is stronger than the motion intensity of the target shot.

6. The scene classification apparatus of video according to
20 claim 4 or 5, further comprising a first highlight scene detector for classifying a scene composed of a plurality of shots continued just before the slow scene into a first highlight scene.

25 7. The scene classification apparatus of video according to claim 6, further comprising:

detector for detecting intensity of an audio signal
accompanied by the video into shot; and

a second highlight scene detector for classifying a scene
composed of a plurality of shots continued before and after a
5 shot with the audio signal intensity stronger than the
predetermined intensity into a second highlight scene,

wherein the scene classified into the first highlight scene
and the second highlight scene is classified into the highlight
scene.

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8. The scene classification apparatus of video according to
claim 7, further comprising:

a commercial scene detector for classifying the respective
15 shots into a commercial scene,

wherein a scene classified into a scene other than the first
highlight scene, the second highlight scene and the commercial
scene is classified into the highlight scene.

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9. A scene classification apparatus of video for segmenting
video into shots and classifying each scene composed of at least
one continued shot based on a content of the scene, comprising:

detector for detecting a histogram relating to motion
25 directions of the shots; and

a detector for detecting a scene in which a camera operation

has been performed based on the histogram of motion direction.

10. The scene classification apparatus of video according to
5 claim 9, further comprising a zooming scene detector for, when
the histogram of motion direction is uniform and a number of
elements of respective bins is larger than a reference number
of elements, classifying its shot into a zooming scene.

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11. The scene classification apparatus of video according to
claim 9, further including:

detector for detecting spatial distribution of motion of
each shot; and

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a panning scene detector for detecting whether the
respective shots are a panning scene based on the histogram of
motion direction and the spatial distribution of motion.

20 12. The scene classification apparatus of video according to
claim 11, wherein when the histogram of motion direction is
concentrated in one direction and the spatial distribution of
motion is uniform, the panning scene detector classifies the
shot into the panning scene.

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13. A scene classification apparatus of video for segmenting video into shots and classifying each scene composed of one or more continuous shots based on a content of the scene, comprising:
a detector for detecting a shot density DS of the video;
5 and
a commercial scene detector for detecting a commercial scene based on the shot density.
- 10 14. A scene classification apparatus of video for segmenting video into shots and classifying each scene composed of one or more continuous shots based on a content of the scene, comprising:
a detector for detecting a number of shot boundaries of the video; and
15 a commercial scene detector for detecting a commercial scene based on the number of shot boundaries.
- 20 15. The scene classification apparatus of video according to claim 1 or 4, wherein the video are compressed data, and the motion intensity is detected by using a value of a motion vector of a predictive coding image existing in each shot.
- 25 16. The scene classification apparatus of video according to claim 11, wherein the video are compressed data, and the spatial

distribution of motion is detected by using a value of a motion vector of a predictive coding image existing in each shot.

5 17. The scene classification apparatus of video according to claim 9, wherein the video are compressed data, and the histogram of motion direction is detected by using a value of a motion vector of a predictive coding image existing in each shot.

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18. The scene classification apparatus of video according to claims 1 and 4, wherein the video are uncompressed data, and the motion intensity is detected by using a value of a motion vector representing a change in motion predicted from a compared
15 result of frames composing the respective shots.

19. The scene classification apparatus of video according to claims 1 and 4, wherein the video are uncompressed data, and
20 the spatial distribution of motion is detected by using a value of a motion vector representing a change in motion predicted from a compared result of frames composing the respective shots.

25 20. The scene classification apparatus of video according to claims 1 and 4, wherein the video are uncompressed data, and

the histogram of motion direction is detected by using a value of a motion vector representing a change in motion predicted from a compared result of frames composing the respective shots.

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21. A scene classification apparatus of video for segmenting video into shots and classifying each scene composed of one or more continuous shots based on a content of the scene, comprising:

a detector for detecting a highlight scene;

10 extracting and combining means for extracting and combining a plurality of highlight scenes; and

inserting means for inserting a video transition effect into a combined portion of the respective highlight scenes,

wherein the inserting means makes a type of the video transition effect to be inserted different according to whether the highlight scenes to be combined are the dynamic scene or the static scene.

20 22. The scene classification apparatus of video according to claim 1, wherein when the highlight scene is the dynamic scene, the video transition effect with small change in an image mixing ratio is inserted therein, and when the highlight scene is the static scene, the video transition effect with large change in
25 the image mixing ratio is inserted therein.